

Summary paper: clean air and technology to enhance our cities as great places to live and work

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This paper summarises the key themes which were discussed at a knowledge sharing event held as part of the National Infrastructure Commission's 'Next Steps for Cities' programme. This paper has been developed in collaboration with the event speakers and city representatives who attended from across the country.

Cities are places that concentrate economic activity, but also concentrate air pollution, particularly nitrogen dioxide and fine particulate matter. The sources of air pollution vary across cities – road transport represents the biggest source of local nitrogen dioxide emissions in 54 cities – yet is an area where local policies can exert significant control.

Clean Air Zones are not the only approach but, if implemented, there could be co-benefits

Ten per cent of deaths globally are caused by poor air quality and the harm falls disproportionately on already disadvantaged communities, so wherever air quality is an issue it needs to be tackled. Clean air zones have the potential to make a significant difference fairly quickly, and could also be part of a longer-term strategy to enforce zero emission zones to meet carbon targets too. Clean Air Zones may not always be the right approach – measures targeted at particular hotspots, or measures targeting particular road users such as bus retrofitting, may be a more cost-effective way of achieving air quality improvements.

The process for developing a business case can be long and challenging, and there are also political hurdles. This is particularly true if private cars are to be included in the restrictions, although in many places it is possible to achieve significant air quality benefits without doing this. Cities shouldn't expect that clean air zones will raise revenue or even cover the costs of enforcement, since it is more likely that most people will adapt to comply with the zone. But infrastructure such as enforcement cameras can also be put to other uses, for instance traffic monitoring and network management. When implementing a clean air zone this shouldn't be at the expense of promoting sustainable transport more broadly.

Supporting electric vehicles should be a priority, but is not a panacea

Cities need to plan for the local infrastructure to support the rapid adoption of electric vehicles. Cities should be considering electric vehicle charging in local plans and planning requirements for new development, and should particularly be setting policies to make space for charging points on residential streets and other locations. There is also scope for upgrading local authorities' own fleets to electric, and supporting car clubs allowing shared use rather than ownership – a number of authorities are already leading the way here.

Zero emission cars will significantly alter the environmental case for car use beyond the 2030s, but this is not the only consideration driving local transport policy. Public transport, cycling and

walking will continue to need strategic planning and support to achieve benefits for reduced congestion and land use, health and wellbeing, and social inclusivity.

Some of the most exciting opportunities for new technology will be in improving public transport, particularly buses

Autonomous vehicles are a long way off, and indeed when they come it may well be that public transport applications are viable before private cars are. But cities should put their main focus on how technology is also enabling change to happen right now. On-demand bus services are a great example, enabling bus services potentially to become viable in places which historically have not had high enough density. Making a success of on-demand buses needs careful thought, for instance to how ‘virtual bus stops’ are designed, whether to make pre-booking possible, and especially on how to get the best data on door-to-door travel patterns. Services may be able to reach commercial viability but are likely to need investment at the start, which can be helped by getting local business partners on board (potentially saving them money on individually commissioned services).

Cities should also be alive to the possibilities across a range of other emerging technologies

There are a whole range of ways that better data use can improve services – from software using existing camera networks to provide better real-time data on status and flows, through to digitised and automated planning applications, asset digital twins, and utility infrastructure mapping that can save roads from being dug up repeatedly. Many cities are testing connected and autonomous vehicles or mobility as a service, as well as managing the challenges of on-demand bike services. Cities are also beginning to think about how they might become adopters of 5G digital – with an early lesson being the importance of identifying real-world problems to solve in initial pilots, whether that is addressing wifi coverage not-spots or enabling improved infrastructure sensor networks.